

Bringing Back a Fugitive

by Johnny Randall



On a recent visit to Huntington Beach State Park in South Carolina, just south of the heavily developed Myrtle Beach commercial zone, I stumbled upon a seabeach amaranth (*Amaranthus pumilus*) restoration site. While admiring the plants, I felt hope for this rare plant species, which is relegated to a tenuous and widely discontinuous ribbon of beach habitat along the Atlantic coast.

The seabeach amaranth was listed as a threatened species in 1993 and is perhaps the only globally rare member of the typically weedy and economically important amaranth family (Amaranthaceae). It is what ecologists sometimes call a “fugitive” species, one that “flees” from competition and finds new habitats as they become available.

The original recorded range of the seabeach amaranth stretched from Charleston, South Carolina, to Cape Cod, Massachusetts, but it has been reduced to about one-third of this historical distribution. About a decade ago, Weakly and Bucher (1992) indicated that the species had been eliminated from six of the states in its original range and was down to approximately 55 populations: 13 in New York, 34 in North Carolina, and 8 in South Carolina. It has, however, just been rediscovered in New Jersey, and the National Park Service has reestablished the species at Assateague Island National Seashore, which straddles the Maryland/Virginia border. Population numbers continue to increase thanks to the efforts of federal and state agencies, university researchers, botanical gardens, and nonprofit conservation organizations like the Center for Plant Conservation. Thanks also goes to writers like Janet Marinelli, who used her seabeach amaranth forays with botanist Stephen Clemments (both

of the Brooklyn Botanic Garden) as the conceptual basis for her book, *Stalking the Wild Amaranth: Gardening in the Age of Extinction*.

The seabeach amaranth is a profusely branched annual whose crown can reach a meter (39 inches) in diameter. It has fleshy pinkish-red stems and small rounded green, notch-tipped leaves that resemble those of spinach, its cultivated cousin. Seabeach amaranth typically occurs on sparsely vegetated areas such as interdunal flats, overwash flats, lower foredunes, and points of non-eroding beaches. It can, however, also be found on suitable sites within estuaries. It is both vulnerable to, and dependent on, habitat disturbances such as beach erosion, dune movement, and storms, but it is primarily at risk of extinction because of human activities. Unnatural disruptions to its habitat include shoreline hardening structures such as groins, seawalls, and sand fences that cause unnatural rates of beach accretion or erosion; hotel and beach house construction; off-road vehicles; beach grooming and raking; and herbivory by feral animals and webworms.

The profligate production of fruits containing small seeds is a typical adaptation of plants that colonize open coastal habitats that are subject to the actions of wind and water. Weakly and Bucher (1992) observed that the seed

does not fully fill the small bladder-like fruit, an adaptation that promotes buoyancy and allows it to float well in both salt and fresh water. Seeds released from the fruits also float because of an apparent waxy coating.

The annual cycle of hurricanes is probably a major influence on the natural distribution of this species. Blown-out dunes and overwash areas just above the tidal zone create suitable habitat for this pioneering species. Hurricane action can also uncover buried seeds lying dormant and is perhaps the reason for the recurrence of populations after the 1996 hurricanes Fran and Bertha.

The recovery plan for seabeach amaranth calls for the development of habitat models, identification of suitable habitat, and the development of reintroduction methods. Claudia Jolls and her students at East Carolina University are using remote sensing and geographic information systems data to predict suitable habitat locations on Cape Hatteras and Cape Lookout national seashores. The collaboration of Steve Roth, Education Coordinator at Huntington Beach State Park, South Carolina, and Dickie Hamilton of the South Carolina Department of Natural Resources has resulted in several successful reintroduction projects. Roth, in addition to Weakley and Bucher (1992), noticed that numerous shorebirds, including the least tern (*Sterna antillarum*), Wilson's plover (*Charadrius wilsonia*), black skimmer (*Rhynchops niger*), Caspian tern (*Sterna caspia*), and the endangered roseate tern (*Sterna dougallii dougallii*), nest in seabeach amaranth stands.

Population genetics research by Alan Strand and his graduate student, Susan Fox, at the College of Charleston shows

that there is very little genetic diversity among populations from New York to South Carolina. These data have broad implications for restoration activities where local seed sources are not available and for the biogeographic history of the taxon.

At the North Carolina Botanical Garden, we hold approximately 10,000 seeds in the CPC national collection. We originally found this species difficult to germinate, but the work of amaranth expert David Brenner of the Plant Introduction Station at Iowa State University's Department of Agronomy showed that approximately 90 percent synchronized germination occurs after 3 months of cool moist stratification. Brenner curates approximately 3,500 amaranth taxa of all sorts—crops, ornamentals, and wild species.

Seabeach amaranth might seem to be particularly vulnerable to extinction given its low population number, extensive habitat loss, and the ironic nature of its weedy but easily disrupted

life history. But as long as hurricanes blow and coastal sanctuaries exist, there is a chance that this fascinating fugitive species will continue to run from competition while clinging to its capricious niche.

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Literature Cited

Weakley, Alan and Margit Bucher. 1992. Status survey of seabeach amaranth (*Amaranthus pumilus* Rafinesque) in North and South Carolina, second edition. Report to the Plant Conservation Program, North Carolina Department of Agriculture, Raleigh, NC, and Asheville Field Office, US Fish and Wildlife Service, Asheville, NC. 149 pp.



Opposite page: Seabeach amaranth in its habitat at Huntington Beach State Park

Photos by Steve Roff/Huntington Beach State Park, South Carolina

Right: Seabeach amaranth about to bloom.

Photo by Helen Hamilton/National Park Service